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ABSTRACT

This teacher's management guide accompanies a set of five booklets which comprise the basic curriculum for "Mathematics Laboratories for Disadvantaged Students," a nationally validated Title III ESEA project. The project was planned for students who are below their expected achievement level in mathematics. Included in the management guide are the following sections: (1) The Math Laboratory Method; (2) Organization of the Lab; (3) Supervision of the Lab; (4) Curriculum Booklet Process; (5) Correlation Materials; (6) Planning Activities for the Lab; (7) Suggested Grading Methods for the Lab; (8) Materials Lists; and (9) Posttests for Curriculum Booklets. (RH)

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Laboratory Mathematics

Booklet 1 **Teacher's Management Guide**

Honea Path Middle School
Honea Path, South Carolina
M. J. Bobo, Principal



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Anderson County School District No. Two
Honea Path, South Carolina
W. E. Sanford, Superintendent

SE 022 692

LABORATORY MATHEMATICS

Booklet I

Teacher's Management Guide

Developed by:

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Honea Path, South Carolina
Anderson County School District No. Two
Honea Path, South Carolina
Sandra Rogers, Laboratory Teacher
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A Nationally Validated Project
funded under
Title III, Elementary and Secondary Education Act
1972-77

PREFACE

This teacher's management guide accompanies a set of five booklets which comprises the basic curriculum for "Mathematics Laboratories for Disadvantaged Students," a nationally validated Title III ESEA project. The management guide and the series of curriculum booklets were compiled by Mrs. Sandra Rogers who has worked in the mathematics laboratories project for three and one-half years. Mr. Dan Sandel, mathematics consultant for the South Carolina State Department of Education, served in an advisory capacity to Mrs. Rogers during the writing and compiling activity.

Teachers who plan to use the mathematics laboratory methods, as developed in this project, are cautioned to be aware that no one set of curriculum materials can be used with all students. The materials developed in this project should serve as the basic core of the laboratory curriculum with each teacher using his own initiative to adapt the materials to the needs of his students.

Materials and methodology alone will not produce a successful mathematics laboratory program. For success to be realized, the mathematics laboratory must be staffed with a teacher and an aide who are dedicated and enthusiastic and who are compassionate toward the type of students served in this project.

ACKNOWLEDGEMENTS

We gratefully acknowledge the contributions of all those persons who assisted in the production of these curriculum materials. We are especially indebted to the following:

Sandra Rogers, Lab Instructor and developer of these Curriculum Materials

The Title III staff of the South Carolina State Department of Education

Dan Sandel of the Curriculum Development Section of the State Department of Education

M. J. Bobo, Principal of Honea Path Middle School

W. E. Sanford, Superintendent of Anderson County School District Two

Brenda Cooley, Typist

Dr. Marvin Woodson
Assistant Superintendent
and Project Director

PHILOSOPHY

The mathematics laboratory project was planned for those students who are, for various reasons, significantly below their expected achievement level in mathematics. The project staff holds the belief that all students can achieve if they are instructed on their own level. Enthusiasm and a belief in each individual student's potential is essential if success is to be achieved. Efforts must continuously be focused on encouraging each student to have faith in his own ability.

Materials and methodology alone will not produce a successful mathematics laboratory program. For success to be realized, the mathematics laboratory must be staffed with a teacher and an aide who have expressed a willingness and a desire to implement the laboratory approach to learning and who are willing to work with disadvantaged students. In addition, the support of the local board of trustees, the superintendent, and the principal is considered essential.

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THE MATH LABORATORY METHOD

Today, as never before, mathematics teachers are facing many new problems. Because of advanced technology, a need for a genuine understanding of mathematics has developed.

Instructors in Anderson County School District Two feel that a change in teaching methods is necessary to help students meet this demand.

Some of our teachers are now turning their interests to the math laboratory approach for certain students. This approach involves the use of materials and equipment such as taped lessons, learning center folders, teacher-made games and activities, curriculum booklets, commercial games, manipulatives, and a wide variety of other teaching materials. These materials help to make the learning of mathematics more inviting while the student works and learns at his own rate. This approach, when implemented, replaces the lecture method and has the following characteristics:

1. Pupil interest is a prime objective of every class. The laboratory teacher allows pupils to make choices based upon diagnosed needs.
2. Most instruction is individualized. Small or large group activities are utilized only when needed.
3. Failure is kept at a minimum. Student achievement is one of the keys to a successful lab.
4. Students assume responsibility for learning and progress at individual rates. Teachers provide

individual attention and encouragement as it is needed.

5. The laboratory method provides students with concrete activities which enable them to relate to abstract mathematical computations.
6. Students are motivated by good grades, rewards, competition, and improved self-concepts.

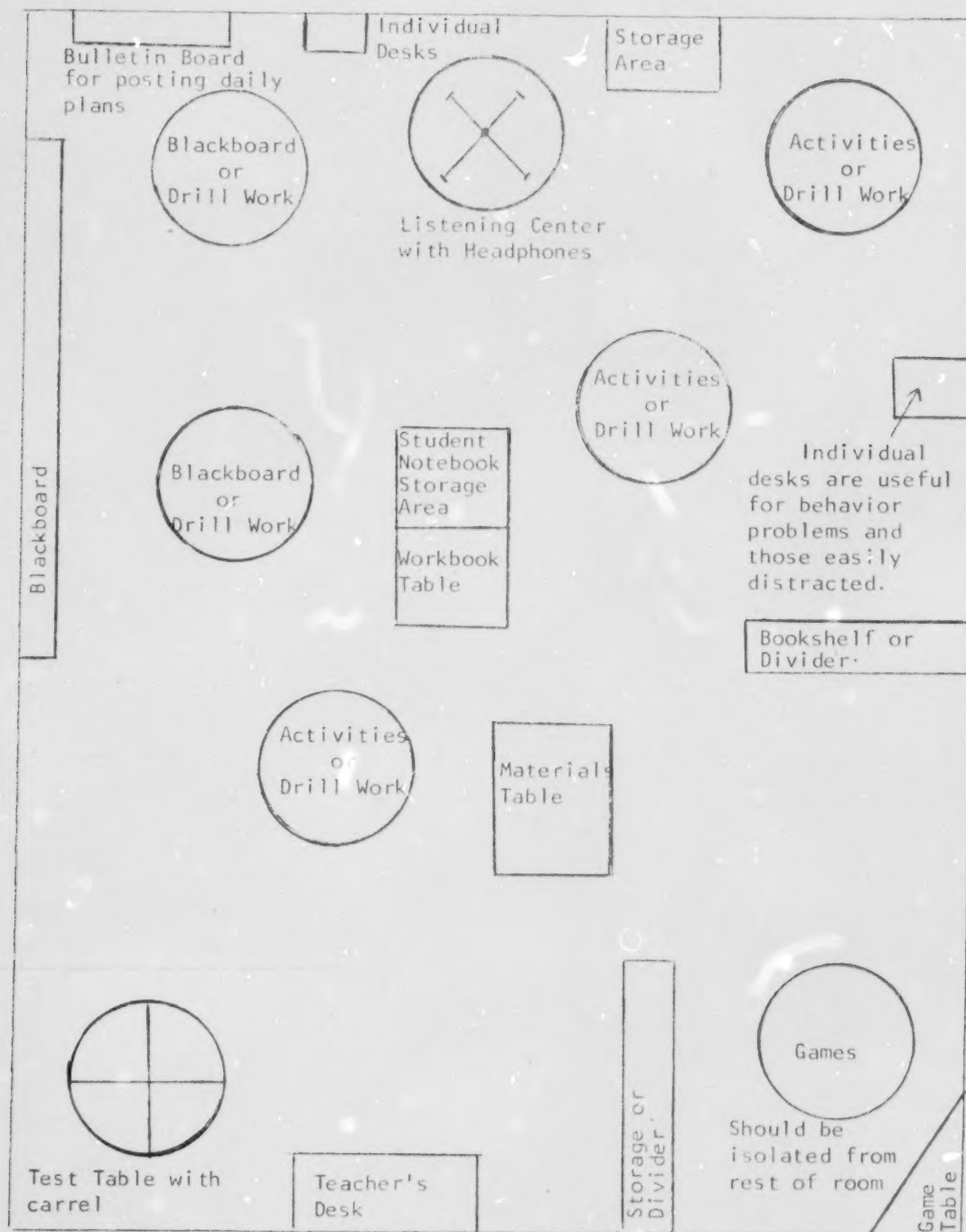
ORGANIZATION OF THE LAB

Starting a math lab takes much time and energy on the part of everyone involved. Success of this teaching approach depends upon being completely prepared. Curriculum booklets, posttests, and worksheets must be duplicated before students arrive. Materials used in PLUS and other teacher-made activities need to be prepared. Prior to program implementations the teacher and aide should learn to play the games, listen to the tapes, and actually perform the suggested activities. This process will help to familiarize the staff with all materials available. Placing materials and games in a secure place provides easy accessibility for the teacher and the element of surprise for the students.

Factors to be considered in arranging the room include the following:

1. Leave adequate walking space between tables.
2. Have listening centers and game tables positioned so as to avoid excess noise.
3. Discourage collaboration on posttests by utilizing teacher-made study carrels or folding screens.

The following floor plan has been found to be useful and practical in the math laboratories at Honea Path Middle School in Anderson County School District No. Two.



SUPERVISION OF THE LAB

The teacher is the most important element in a successful math lab. Planning for math lab activities is a daily necessity as the teacher makes sure that all necessary materials and guidesheets are available and ready for student use.

In getting ready to implement the math laboratory approach, the aide is an essential person. She should assist the teacher in planning, preparing materials, providing instruction to students, decorating the room, correcting papers, filing, and sharing information about student's daily performance. In dealing with behavior problems, each school has its own policy regarding the aide's role in discipling students. It is the teacher's duty to acquaint the aide with all responsibilities and limitations from the very beginning. The teacher-aide relationship is not a 50-50 proposition. The teacher is the "boss."

During class, student participation is essential and should be encouraged by the teacher. Assistance and extra instruction is given to students who need and request it. Discussions and checkups allow the teacher to evaluate the effectiveness of the program.

Lack of proper student training will result in the failure of the math lab approach. Students should be instructed to:

1. come into the classroom orderly and remain quiet. Good discipline is a must.
2. handle materials carefully.
3. work consistently and participate in all assigned activities.

4. help others. (Caution: help should not be given on posttests.)
5. keep work area clean.
6. put materials in proper storage area when finished.
7. keep work neat and understandable.
8. operate equipment properly.
9. evaluate their own work occasionally.

Teachers who implement the laboratory approach may also have other management techniques.

Students should be given responsibilities for keeping the math lab in order. By placing their notebooks in the assigned places, students who come later in the day know where to locate materials, booklets, equipment, and games. About five minutes at the end of each period should be allotted for replacement of materials. Potential troublemakers should be given definite assignments at this time. This leaves the teacher and the aide free to get ready for the next class.

The hub of the Math Laboratories for Disadvantaged Students is the set of curriculum booklets contained in this package. These booklets were developed early in the project's implementation in Anderson District No. Two. The booklets have been extremely useful and effective in the laboratory approach. Revisions have been made as students' needs have changed. Before actual implementation the teacher and aide should make 25-30 copies of each curriculum booklet. Answers should be put in one copy to serve as a teacher's edition. These booklets should remain in the lab at all times, with homework being assigned from them. Students should copy and answer the problems from the booklets in their composition

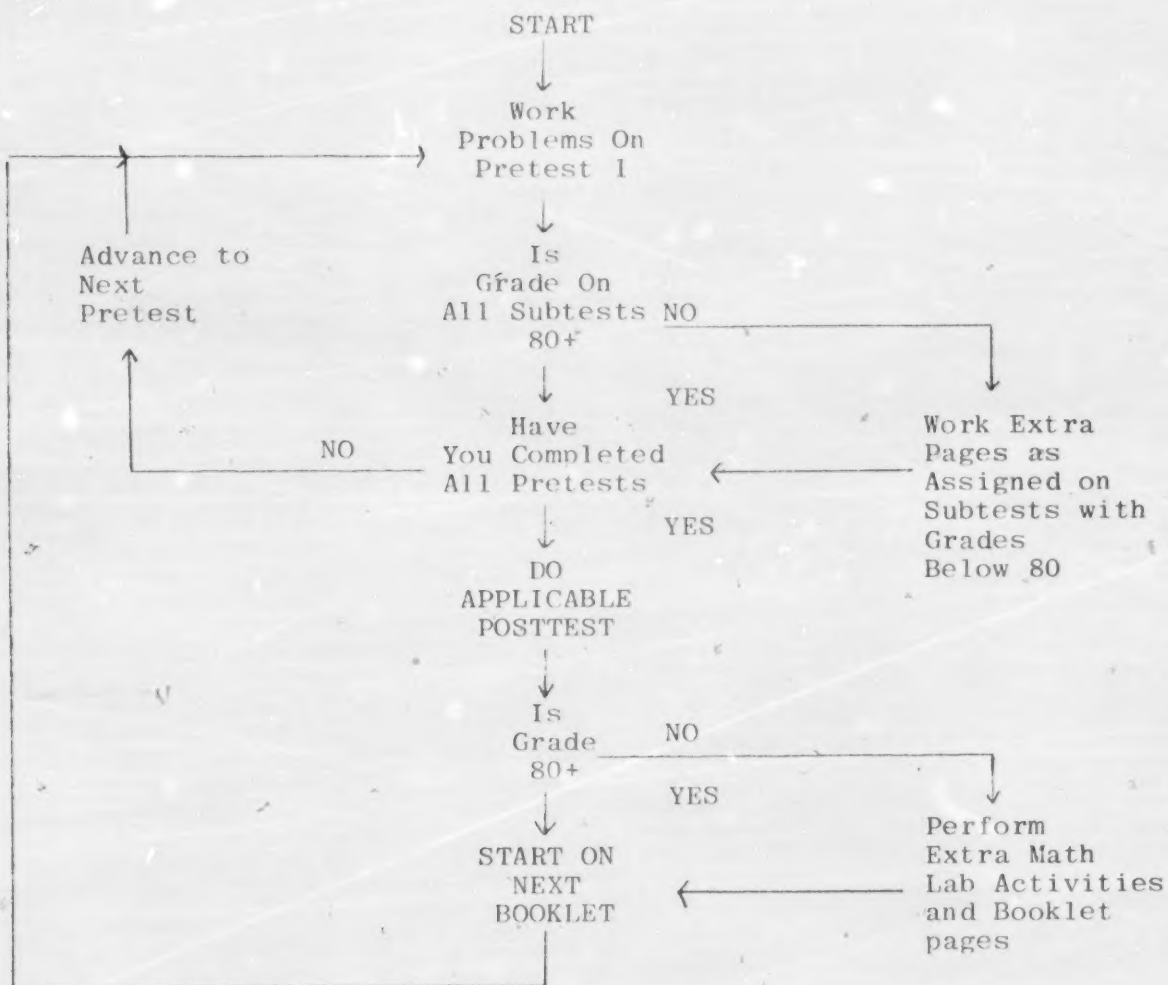
notebooks. These notebooks should remain in the lab for the semester. No answers or other markings should ever be made in the curriculum booklets.

All student work should be orderly and neat. A space is needed on each page of the students' composition notebook for grading. Each page should be corrected and graded immediately. Additional booklet assignments should be made as needed. These assignments can be found as a part of the pretests.

Each booklet contains several pretests. Each pretest consists of several subtest. Copies of each pretest can be made for each student or students can be instructed to copy the pretest exactly as it appears on the page. When the pretests are corrected, the teacher should place the student's score for each subtest in the box provided.

CURRICULUM BOOKLET PROCESS

The flow chart below shows the process of progression through the curriculum booklets.



1. Always begin with pretest A and progress to pretest B, C, D, in sequence.
2. Work booklets in sequence.

Each student begins with Pretest A of the whole number booklet. He proceeds to the other pretests in the proper

sequence as long as a grade of 80 or above is made on each subtest. When a grade below 80 is made on any subtest of any pretest, additional pages are assigned as shown in the following sample.

Whole Numbers
Pretest B

1. $\begin{array}{r} 7 \\ +2 \\ \hline 9 \end{array}$	2. $\begin{array}{r} 14 \\ +23 \\ \hline 37 \end{array}$	3. $\begin{array}{r} 2 \\ +2 \\ \hline 4 \end{array}$	4. $\begin{array}{r} 84 \\ +10 \\ \hline 94 \end{array}$	5. $\begin{array}{r} 20 \\ +14 \\ \hline 34 \end{array}$
6. $\begin{array}{r} 5007 \\ +2941 \\ \hline 7948 \end{array}$	7. $\begin{array}{r} 205 \\ +791 \\ \hline 1006 \end{array}$ X	8. $\begin{array}{r} 73 \\ +6 \\ \hline 79 \end{array}$	9. $\begin{array}{r} 108 \\ +450 \\ \hline 558 \end{array}$	10. $\begin{array}{r} 2502 \\ +112 \\ \hline 2614 \end{array}$

Do pages 12 and 13.

90

11. $\begin{array}{r} 9 \\ +7 \\ \hline 16 \end{array}$	12. $\begin{array}{r} 62 \\ +8 \\ \hline 70 \end{array}$	13. $\begin{array}{r} 305 \\ +689 \\ \hline 995 \end{array}$ X	14. $\begin{array}{r} 37 \\ +23 \\ \hline 70 \end{array}$ X	15. $\begin{array}{r} 56 \\ +46 \\ \hline 92 \end{array}$ X
16. $\begin{array}{r} 634 \\ +268 \\ \hline 902 \end{array}$	17. $\begin{array}{r} 800 \\ +800 \\ \hline \end{array}$	18. $\begin{array}{r} 3084 \\ +712 \\ \hline 3796 \end{array}$	19. $\begin{array}{r} 972 \\ +28 \\ \hline 1000 \end{array}$	20. $\begin{array}{r} 80042 \\ 917 \\ \hline 80959 \end{array}$

Do pages 14, 15, and 16.

70

21. $\begin{array}{r} 4 \\ 3 \\ +2 \\ \hline 9 \end{array}$	22. $\begin{array}{r} 12 \\ 7 \\ +10 \\ \hline 29 \end{array}$	23. $\begin{array}{r} 27 \\ 13 \\ +15 \\ \hline 45 \end{array}$ X	24. $\begin{array}{r} 2 \\ 9 \\ +15 \\ \hline 26 \end{array}$	25. $\begin{array}{r} 900 \\ 300 \\ 400 \\ +600 \\ \hline 2200 \end{array}$
26. $\begin{array}{r} 50 \\ 1 \\ 3 \\ +9 \\ \hline 63 \end{array}$	27. $\begin{array}{r} 73 \\ 6 \\ 4 \\ 2 \\ +5 \\ \hline 91 \end{array}$ X	28. $\begin{array}{r} 10 \\ 10 \\ +10 \\ \hline 30 \end{array}$	29. $\begin{array}{r} 6 \\ 0 \\ 5 \\ 4 \\ +9 \\ \hline 24 \end{array}$	30. $\begin{array}{r} 107 \\ 92 \\ 1 \\ +17 \\ \hline 217 \end{array}$

Do pages 17, 18, and 19.

80

In this example pretest, pages 14, 15, and 16 must be worked. Pages 12, 13, 17, 18, and 19 should not be worked because satisfactory grades were attained on these subtests.

Student notebooks should be checked frequently to make sure that the students are working all assigned pages. Student work should be completed in the order in which they are assigned and should be neat.

The posttests for each curriculum booklet are provided as a part of this management guide. They are included in this booklet for teacher use only and should never become a part of the students' copies of the curriculum booklet. Help given to the students during posttesting will invalidate the test results. The posttests measure all skills in each booklet. A grade of 80 or better on a single posttest allows the student to progress to the next curriculum booklet. Should the student make a score below 80, the teacher must provide additional work for the student in that math area. As math lab teachers become familiar with the math lab methodology, new booklets can be developed to supplement the provided materials. In no way are the five curriculum booklets meant to constitute a comprehensive math curriculum. One booklet that is especially recommended for development is a measurement booklet.

The following correlation of commercial materials incorporates games, the Intermediate Math Program of tapes, teacher-made activities found in the Math Lab Activity Booklet, PLUS, and Spectrum worksheets. Two or three days should be allowed for each student to work with an assigned curriculum booklet. Additional time may be allowed for playing a suitable game, listening to appropriate tapes, or working on assigned activities. All activities, games, tapes, etc. need not be used. Each student's needs will dictate which activities should be assigned. Games can be used as rewards or as reinforcement.

CORRELATION GUIDE

WHOLE NUMBERS	Workbook	Commerical Games	Tapes	Math Lab Activity Booklet (Numbers refer to Activity No.)	PLUS	SPECTRUM
Place Value	Page 1-10	Abacus Raco	2	8, 9, 10, 11, 12, 13, 14, 15, 16, 17	Number Meaning- 13, 19, 21, 23 Challenge- 5, 15	Red 1-57 Orange 1-35 Yellow 1-13 Green 1-11
Addition	Page 11-19	Smarty, Addo Shotzee, Tengo, Numble Matrix, Neurotic Nines, Sum Fun	3, 4	19, 20, 21, 22, 23 24, 25, 26, 27, 28 29, 30, 31, 32, 33, 34, 35, 36, 37, 38 39, 40, 42, 44, 45, 53, 60, 136	Drill-2, 4, 6, 10, 11, 13, 14, 15, 16, 17, 37, 38, 39, 51, 53, 54 Challenge-7, 10, 11	Red 1-57 Orange 1-35 Yellow 1-13 Green 1-11
Subtraction	Page 20-26	Smarty Sun Fun	5, 6, 7	21, 40, 41, 42, 43, 44, 45, 46, 47, 53, 136	Drill-5, 6, 10, 14, 21, 51 Challenge-7	Red 1-57 Orange 1-35 Yellow 1-13 Green 1-11
Multiplication	Pages 27-34	Multi.records Tingo, Numble Multo, Multi- factor, Winning Touch	8, 9, 10, 11	24, 35, 48, 49, 51, 52, 53, 54, 56, 57, 59, 60, 61, 62, 63, 64, 65, 67, 68, 98	Drill-52, 57 Challenge-6 Miscellaneous- 15, 20	Red 76-105, 126-133 Orange 36-71 Yellow 14-25 Orange 116-127 Green 12-25
Division	Page 35-39	Rally with Remainders	12, 13, 14, 39	Page 24-Car Buying 66, 68, 69		Red 106-125 Orange 82-127 Yellow 26-57 Green 12-25

WHOLE NUMBERS	Workbook	Commerical Games	Tapes	Math Lab Activity Booklet (Numbers refer to Activity No.)	PLUS	SPECTRUM
Appropriate for teaching Whole Numbers		Famous People, Number Puzzles, Operations Bingo, Math Match, Number Sentences Games, Math Wheels, Mathfacts, Cuisenaire rods, Math Mysteries, Heads Up, Flash cards, Math Balance Beam		55, 58.	Number Meaning-24 Drill-1, 7, 8, 9, 12, 18, 19, 20, 24, 25, 27, 28, 29, 30, 31, 32, 33, 35, 36, 40, 41, 45, 46, 48, 49, 50, 55 Challenge-1 Misc.-13	Blue 1-23
Appropriate anytime		Aftermath, Numo, Eureka, Mathimagi-nation, Math Mazes, Math Puzzles, Math Challenges, Classmate 88, Math Amusements, Math Applications Kit, Tuf		153, 154	Number Meaning-26 Drill-22, 23, 26, 34, 42, 43, 44, 47, 56 Fractions-10 Challenge-4	

WHOLE NUMBERS	Workbook	Commercial Games	Tapes	Math Lab Activity Booklet (Numbers refer to Activity No.)	PLUS	SPECTRUM
For fun, reward, or can be adapted to any subject		Carom board, Checkers, Battleship, Chinese Checkers, Connect Four, Ring Toss, Bingo, Monopoly, 3 D Tic-Tac-Toe			Challenge-3, 4, 9, 12, 13, 14, 16, 17, 18, 19 Miscellaneous- 6, 71, 72	

FRACTIONS	Workbook	Commercial Games	Tapes	Math Lab Activity Booklet (Numbers refer to Activity No.)	PLUS	SPECTRUM
Meaning	Pages 1-3		18	70, 77, 79	Fractions-1, 2, 3	Yellow 69-70
Renaming	Pages 4-8	Tripletts, Fractions-Easy As Pie	19, 30	76, 90	Fractions-5,	Yellow 75-76, 78-86
Multipli- cation	Pages 9-13		22	74, 84, 155		Yellow 88-97 73-74, 127-128 Green 26-41
Division	Pages 14-18		23			Green 54-75
Addition	Pages 19-23	Fractions-Easy As Pie	20	71, 73, 78, 80, 83, 84, 85, 87, 88	Fractions-9, 12, 16 Miscellaneous-10	Yellow 98-111, 71-72, 77, 129-130 Green 42-53
Subtraction	Pages 24-30		21	71, 72, 80, 83, 88	Fractions-7, 9, 16 Miscellaneous-10	Yellow 112-125, 131-132
Size	Pages 31-33			75, 86	Fractions 19	

FRACTIONS	Workbook	Commercial Games	Tapes	Math Lab Activity Booklet (Numbers refer to Activity No.)	PLUS	SPECTRUM
Appropriate for teaching Fractions		Math Wheels, Fraction Bingo, Fraction Domino, Here to There, Come out even, My Fraction Book	24, 29	81, 82, 89, 99	Fractions-18	Blue 24-25
Appropriate anytime		Aftermath, Numo, Eureka, Mathimagination, Math Mazes, Math Puzzles, Math Challenges, Classmate 88, Math Amusements, Math Applications Kit, Tuf		153, 154	Number Meaning-26 Drill-22, 23, 26 34, 42, 43, 44, 47, 56 Fractions-10 Challenge-4	
For fun, reward, or can be adapted to any subject		Carom board, Checkers, Battleship, Chinese Checkers, Connect Four, Ring Toss, Bingo, Monopoly, 3 D Tic-Tac-Toe			Challenge-3, 4, 9, 12, 13, 14, 16, 17, 18, 19 Miscellaneous-6, 71, 72	

DECIMALS	Workbook	Commercial Games	Tapes	Math Lab Activity Booklet (Numbers refer to Activity No.)	PLUS	SPECTRUM
Place Value	Pages 1-4			8, 10, 11, 14, 16, 17	Fractions-4	
Addition	Pages 5-9		25	150, 151, 152	Money-1, 2, 3, 4, 6, 7 Challenge-5	Green 90-105
Subtraction	Pages 10-14		25	150, 152	Money-3, 5, 6	Green 90-105
Multiplication	Pages 15-19		26			Green 106-115
Division	Pages 20-25		27			Green 116-129
Renaming	Pages 26-30				Fractions-6, 14, 15	
Size	Pages 31-32					
Appropriate for teaching Decimals		Math Wheels Toy Money	28, 29	50	Fractions-8	Blue 46-67

DECIMALS	Workbook	Commercial Games	Tapes	Math Lab Activity Booklet (Numbers refer to Activity No.)	PLUS	SPECTRUM
Appropriate anytime		Aftermath, Numo, Eureka, Mathimagination, Math Mazes, Math Puzzles, Math Challenges, Classmate 88, Math Amuse- ments, Math Applica- tions Kit, Tuf		153, 154	Number Meaning- 26 Drill-22, 23, 26 34, 42, 43, 44, 47, 56 Fractions-10 Challenge-4	
For fun, reward, or can be adapted to any subject		Carom board, Checkers, Battleship, Chinese Checkers, Connect Four, Ring Ross, Bingo, Monopoly, 3 D Tic-Tac-Toe			Challenge-3, 4, 9, 12, 13 14, 16, 17, 18, 19 Miscellaneous- 6, 71, 72	

PERCENT	Workbook	Commercial Games	Tapes	Math Lab Activity Booklet (Numbers refer to Activity No.)	PLUS	SPECTRUM
Meaning	Pages 1-4		31			
Decimal -- Percent	Pages 5-7				Fractions-14	
Fraction-- Percent	Pages 8-10					
Percent of Numbers	Pages 11-13		32, 33	155		
Word Problems	Pages 14-15		34			
Appropriate for teaching Percent			50			Blue 106-117 Green 130-139 Purple 50-79
Appropriate anytime		Aftermath, Numo, Eureka, Mathimagination, Math Mazes, Math Puzzles, Math Challenges, Classmate 88, Math Amuse- ments, Math Applica- tions Kit, Tuf		153, 154	Number Meaning- 26 Drill-22, 23, 26 34, 42, 43, 44, 47, 56 Fractions-10 Challenge-4	

PERCENT	Workbook	Commercial Games.	Tapes	Math Lab Activity Booklet (Numbers refer to Activity No.	PLUS	SPECTRUM
For fun, reward, or can be adapted to any subject		Carom board, Checkers, Battleship, Chinese Checkers, Connect Four, Ring Toss, Bingo, Monopoly, 3 D Tic-Tac-Toe			Challenge-3, 4, 9, 12, 13, 14, 16, 17, 18, 19 Miscellaneous- 6, 71, 72	

THEORY	Workbook	Games	Tapes	Math Lab. Activity Booklet (Numbers refer to Activity No.)	PLUS	SPECTRUM
Prime Composite	Pages 1-4	Prime Drag	15, 16, 17			
Odd Even	Pages 5-8				Counting-12, 16 Number Meaning 9, 10, 21	
Integers	Pages 9-15			149		
Divisibility	Pages 16-17					
Exponents	Pages 18-22					
Appropriate anytime		Aftermath, Numo, Eureka, Mathimagi- nation, Math Mazes, Math Puzzles, Math Challenges, Classmate 88, Math Amusements, Math Applications Kit, Tuf				

THEORY	Workbook	Commercial Games	Tapes	Math Lab Activity Booklet (Numbers refer to Activity No.)	PLUS	SPECTRUM
For fun, reward, or can be adapted to any subject		Carom board, Checkers, Battleship, Chinese Checkers, Connect Four, Ring Toss, Bingo, Monopoly, 3 D Tic-Tac-Toe			Challenge-3, 4, 9, 12, 13, 14, 16, 17, 18, 19 Miscellaneous- 6, 71, 72	

Planning Activities for the Lab

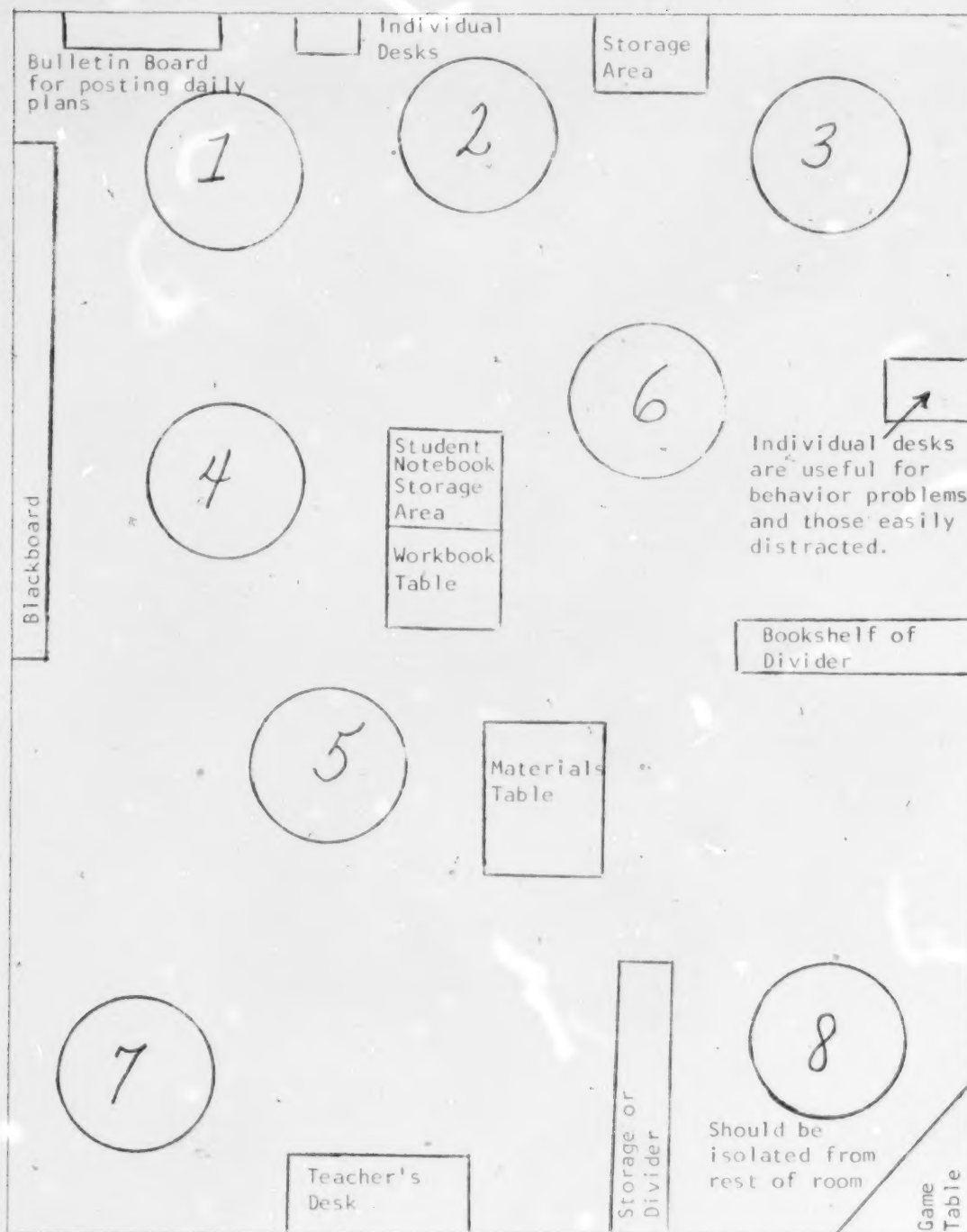
When planning for student work, limit the number of activities, especially those that are difficult and require supervision by the teacher or aide. Lesson plans should be as detailed as the teacher needs them. It is not wise to plan too far in advance. A week's planning is sufficient. Be flexible enough to change plans at any time. Always have easily supervised activities available in case of teacher or aide absence.

Daily assignments and seating arrangements should be posted in a suitable location for all students to see as they enter the lab.

Shown below is an example of one lesson plan which could be posted.

Period	<u>1</u>	Date:	<u>April 25, 1977</u>
<u>Table</u>	<u>Students</u>	<u>Assignment</u>	
1	Gary, Ann Ray	Curriculum booklet	
2	Timmy, Doug Mary	Tape 31, Meaning of Percent	
3	Bill, Susan Sandra, Joe	Spectrum-Red, pages 3, 4, and 5	
4	Annette, Keith Ronald, Nancy	Curriculum booklet	
5	Sam, Brenda Jody	"Fraction Race", page 40 PLUS #17	
6	Joanne, Michael Anne Marie	"Cootie", page 44 Curriculum guide, #60	
7	Tyrone, Jonas	Whole Number Testing, Percent	
8	Chris, Dwayne Cindy, Sharon	Prime Drag (Commerical game)	

ROOM ARRANGEMENT



If equipment, guidesheets, and materials are on each table when the students arrive, they will be ready to start work immediately.

SUGGESTED GRADING METHODS FOR THE LAB

An immediate check-up, discussion, or type of follow-up activity upon completion of each assignment will encourage student participation. Manipulation and handling of materials, student attitudes, and cleanliness of work areas should be taken into account when grading students. Teachers should continually remind students that a good grade is possible. Success for disadvantaged students is another element in a successful math lab.

Individual contracts with students encourage competition, improve attendance, and permit students to choose the grade desired at the end of the reporting period.

An example of an individual contract used during a nine-week reporting period with 250 minutes of math a week is as follows:

Number of Grades in Student Notebook

	<u>Grade</u>
30 or more	A
29-25	B
24-20	C
19-15	D
14 or less	F

This contract can be altered to meet the abilities of each class. A grade of 80 or above on each part of the pretest is required. The following grading sheet may be used to determine the booklet grade. Only grades from the curriculum booklet should be counted on this particular grade sheet. Extra worksheets from Spectrum and other sources are not included in the booklet grade.

NAME _____ SECTION _____

Grading Period 1 2 3 4 Circle one.

Circle the grades below 80. They do not count.

	Booklet No.	Page Number	Grade
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
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33.			
34.			
35.			
36.			
37.			
38.			
39.			
40.			

Final Grade _____

This grade sheet can be filled in by the student, teacher, or aide.

Factors to be considered for the total grade are:

50% Notebook grade _____

20% Posttest average _____

10% Participation and attitude _____

20% Tapes, activities, worksheets, and game
checkups _____

Now, its time to begin! The math laboratory room is attractively decorated. Booklets 2-6 have been duplicated. Stored materials are easily accessible. Class plans are made and posted. The work has been hard, but the rewards will be great. GOOD LUCK!

MATERIALS LIST

The following is a list of teaching materials, furniture, and consumable items needed during the start-up period.

Teaching Materials

1	Timer	5.25
1	Stop Watch	27.50
1 ea.	Spectrum (6 books in set) (Grade 3-8) @ \$1.77-Laidlaw Book Company	10.62
1 ea.	Flash cards (add, subtract, multiply, divide) @ \$2.25	9.00
12	yardsticks	7.50
1 set	Cuisenaire rods and activity cards	47.90
1 ea.	Math Balance Beam and weights, Teacher's guide	11.75
24 ea.	rulers	4.00
1	Toy Money	1.90
1	Ring toss game	4.85
1	Bingo	2.00
4 bxs.	Manila folders (100 box)	19.60
1	Winning Touch	7.50
5	Meter sticks	5.50
1	Tuf	10.50
1	Racko	4.85
1	Monopoly	5.00
1	Math Match	2.50
1	3-D Tic Tac Toe	6.50
1	Intermediate Math Program with tapes, worksheets, and teacher's manual (Imperial)	395.00

1	Heads Up	6.75
24	Math Lab Boxes	6.50
1 ea.	Math Amusements in Developing Skills Volume 1 & 2 (Midwest Publications)	11.90
2	Multifactor (Masters & Co.)	7.96
1	Chear Math Lab Equipment	4.95
2	Come Out Even (Holt Rinehart and Winston)	14.40
1	Here To There (Scott Foresman)	9.00
1	Math Applications Kit (SBA)	54.50
1	Measurement Kit (Dry & Liquid)	11.50
1	My Fraction Book	3.95
1	Musical Multiplication records	12.95
1 ea.	Aftermath Books 1-4	16.00
1	Numo	14.95
1	PLUS	5.25
1	Smarty	5.50
1	Tingo	3.50
1	Shortzie	4.25
1	Famous People Number Puzzle-Mr. Math (Creative Teaching Asso.)	3.50
1	Operations Bingo	7.95
1	Rally with Remainders-Mr. Math (Creative Teaching Asso.)	2.50
1	Number Sentence Games	3.50
1	Eureka	4.50
1	Clock dial	8.95
1 ea.	Math Wheels-auto, freeway, market, kitchen	9.00
1	Prime Drag	3.95
1	Numble	5.70
1	Neurotic Nines	2.00

1 ea.	Mathimagination-Book B, C, D, E	15.00
1	Tripletts	3.00
1	Fraction Bingo	4.00
1	Sum Fun	5.50
1	Math Mazes (Ideal)	4.75
1	Math Puzzles (Ideal)	4.75
1	Math Challenges (Ideal)	4.75
1	Fractions Easy As Pie	2.00
1 ea.	Math facts games (multiplication-division) (addition-subtraction)	42.00
1	Addo	2.15
1	Multo	2.15
1	Tengo	2.25
1 ea.	Math Mysteries-Books 1, 2, 3	11.25
1	Carom Board	11.50
1	Checkers	2.00
1	Battleship	8.40
1	Chinese Checkers	2.65
1	Connect Four	6.30
1	Matrix	5.95
16 pr.	Die	2.15
4 sets	Blank playing cards	3.60
1	Abalus	9.50
1	Muffin pan	1.00
6	Blank die	5.50
2	Bean bags	1.60
1 roll	Butcher paper	17.90
1	Fraction dominoes	4.75

Consumable Items

1	Stapler	7.00
4 bxs.	Staples	2.12
10	Magic markers	3.00
4 bxs.	Stencils	9.44
10	Multicolored felt pens	3.30
5 btls.	glue	2.80
24 pr.	scissors	7.20
3 pkg.	construction paper (multicolored)	3.06
200	Index cards	3.46
2 bxs.	Paper clips	3.28
25 bxs.	Crayons	12.65
1 bx.	Rubber bands	.34
10 rls.	3" calculator paper	2.80
10 rls.	Masking tape	6.60
10 rls.	Clear tape	7.20

Equipment

1	Classmate 88 (Monroe)	759.00
1	Tape recorder	49.95
1 set.	Headphones and distributor for tape recorder	69.95

Furniture

2	4-drawer filing cabinets @ \$100.80	201.60
32	Classroom chairs @ \$9.90	361.80
8	Tables @ \$54.30	434.40

POST TEST WHOLE NUMBERS

1. Write the compact number for: $60,000 + 700 + 30 + 6 = \underline{\hspace{2cm}}$.
2. Write in expanded form $908 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$.
3. $537 = \underline{\hspace{1cm}}$ hundreds + $\underline{\hspace{1cm}}$ tens + $\underline{\hspace{1cm}}$ ones.
4. 9 thousands + 6 hundreds + 3 tens + 8 ones = $\underline{\hspace{2cm}}$.

In 4598

5. is in hundreds place.
6. 9 is in place.
7. 4 is in place.

$$\begin{array}{r} 8. \quad 9 \\ + 8 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 23 \\ + 46 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 9007 \\ + 602 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 638 \\ + 699 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 103 \\ + 916 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 1976 \\ + 52 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 7 \\ 5 \\ + 8 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 132 \\ 121 \\ + 143 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 34 \\ 79 \\ + 88 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 8 \\ - 0 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 63 \\ - 13 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad 1768 \\ - 1523 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 35 \\ - 18 \\ \hline \end{array}$$

$$\begin{array}{r} 21. \quad 744 \\ - 568 \\ \hline \end{array}$$

$$\begin{array}{r} 22. \quad 1752 \\ - 999 \\ \hline \end{array}$$

$$\begin{array}{r} 23. \quad 300 \\ - 135 \\ \hline \end{array}$$

$$\begin{array}{r} 24. \quad 3006 \\ - 1908 \\ \hline \end{array}$$

$$\begin{array}{r} 25. \quad 2023 \\ - 197 \\ \hline \end{array}$$

$$\begin{array}{r} 26. \quad 12 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 27. \quad 207 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 28. \quad 2341 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 29. \quad 104 \\ \times 32 \\ \hline \end{array}$$

$$\begin{array}{r} 30. \quad 711 \\ \times 404 \\ \hline \end{array}$$

$$\begin{array}{r} 31. \quad 26 \\ \times 40 \\ \hline \end{array}$$

$$32. \quad 2 \times 7 \times 4 = \underline{\hspace{2cm}}$$

$$33. \quad 6 \times 42 \times 3 = \underline{\hspace{2cm}}$$

Post Test Whole Numbers
Page 2

34. $2 \times 2 \times 2 \times 2 = \underline{\hspace{2cm}}$

35. $4 \overline{)9156}$

36. $7 \overline{)7005}$

37. $6 \overline{)606}$

38. $12 \overline{)324}$

39. $45 \overline{)315}$

40. $13 \overline{)1318}$

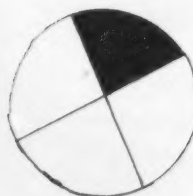
POST TEST FRACTIONS

Give all answers in simplest form.

What part is shaded? Express as a fraction.



3.



Rename these fractions:

4. $\frac{6}{8} = \frac{\quad}{4}$

5. $\frac{6}{11} = \frac{\quad}{22}$

6. $\frac{7}{14} = \frac{\quad}{2}$

7. $\frac{9}{9} = \frac{\quad}{1}$

8. $5\frac{2}{3} = \frac{\quad}{\quad}$

9. $9\frac{1}{8} = \frac{\quad}{\quad}$

10. $\frac{10}{7} = \frac{\quad}{\quad}$

11. $\frac{29}{8} = \frac{\quad}{\quad}$

Multiply:

12. $\frac{2}{3} \times \frac{5}{7} = \frac{\quad}{\quad}$

13. $\frac{4}{7} \times \frac{1}{3} = \frac{\quad}{\quad}$

14. $\frac{2}{3} \times \frac{3}{4} = \frac{\quad}{\quad}$

15. $\frac{3}{5} \times \frac{5}{7} = \frac{\quad}{\quad}$

16. $\frac{1}{2} \times 2\frac{1}{3} = \frac{\quad}{\quad}$

17. $\frac{2}{3} \times 5\frac{1}{3} = \frac{\quad}{\quad}$

18. $\frac{1}{4} \times 12 = \frac{\quad}{\quad}$

19. $\frac{1}{4} \times 0 = \frac{\quad}{\quad}$

Divide:

20. $\frac{3}{4} \div \frac{1}{2} = \frac{\quad}{\quad}$

21. $\frac{4}{7} \div \frac{5}{7} = \frac{\quad}{\quad}$

22. $\frac{1}{5} \div \frac{4}{7} = \frac{\quad}{\quad}$

23. $\frac{4}{7} \div \frac{1}{2} = \frac{\quad}{\quad}$

24. $\frac{5}{4} \div 10 = \frac{\quad}{\quad}$

25. $2\frac{3}{5} \div \frac{3}{4} = \frac{\quad}{\quad}$

26. $14 \div 3\frac{1}{3} = \frac{\quad}{\quad}$

27. $2\frac{1}{5} \div 2\frac{1}{5} = \frac{\quad}{\quad}$

Post Test Fractions
Page 2

Add:

28. $1/5 + 3/5 =$ _____

29. $4 \frac{3}{4} + 1 \frac{1}{4} =$ _____

30. $1/16 + 3/16 =$ _____

31. $2 \frac{3}{10} + 6/10 =$ _____

32. $1/8 + 1/4 =$ _____

33. $2 \frac{3}{15} + 2 \frac{1}{15} =$ _____

34. $4 \frac{3}{4} + 6 \frac{5}{8} =$ _____

35. $5 \frac{2}{5} + 3 \frac{3}{10} =$ _____

Subtract:

36. $3 \frac{7}{8} - 4/8 =$ _____

37. $4 \frac{3}{4} - 1/4 =$ _____

38. $6 \frac{4}{5} - 2/5 =$ _____

39. $5/7 - 2/7 =$ _____

40. $5/7 - 2/3 =$ _____

41. $10 \frac{3}{4} - 2 \frac{5}{8} =$ _____

42. $8 \frac{3}{5} - 3 \frac{1}{3} =$ _____

43. $12 \frac{5}{6} - 5 \frac{3}{8} =$ _____

44. $14 - 8 \frac{1}{3} =$ _____

45. $8 \frac{2}{3} - 2 \frac{3}{4} =$ _____

46. $7 \frac{1}{8} - 2 \frac{3}{8} =$ _____

47. $9 - 4 \frac{6}{7} =$ _____

Circle the largest fraction:

48. $3/9, 6/9$

49. $6/7, 5/6, 2/3$

50. $9 \frac{6}{9}, 9 \frac{4}{7}, 9 \frac{2}{3}$

POST TEST DECIMALS

Write a decimal for the following.

1. three and six tenths _____

2. six and five hundredths _____

Write each decimal in words.

3. .7 _____

4. 100.305 _____

Give the place value of each number that is starred.

5. 42.70* _____

6. 392.106* _____

7. 1,293.12* _____

Add:

$$\begin{array}{r} 8. \quad .37 \\ + .23 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 1.904 \\ + .377 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad .957 \\ + .153 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 107.5 \\ + .9 \\ \hline \end{array}$$

$$12. \quad 1.9 + .02 = \underline{\hspace{2cm}}$$

$$13. \quad .04 + .005 = \underline{\hspace{2cm}}$$

$$14. \quad 6 + 7 + .2 = \underline{\hspace{2cm}}$$

$$15. \quad 3.02 + .5 = \underline{\hspace{2cm}}$$

Subtract:

$$\begin{array}{r} 16. \quad .37 \\ - .23 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 14.03 \\ - .04 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 2.2 \\ - .5 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad .921 \\ - .509 \\ \hline \end{array}$$

$$20. \quad .6 - .2 = \underline{\hspace{2cm}}$$

$$21. \quad 1.9 - .04 = \underline{\hspace{2cm}}$$

$$22. \quad 6 - .2 = \underline{\hspace{2cm}}$$

$$23. \quad 942.7 - 42.79 = \underline{\hspace{2cm}}$$

Multiply:

$$\begin{array}{r} 24. \quad .32 \\ \times .32 \\ \hline \end{array}$$

$$\begin{array}{r} 25. \quad 28 \\ \times .09 \\ \hline \end{array}$$

$$\begin{array}{r} 26. \quad 7.4 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 27. \quad .328 \\ \times 44 \\ \hline \end{array}$$

$$28. \quad .2 \times 2 \times 2 = \underline{\hspace{2cm}}$$

$$29. \quad 7.9 \times .06 = \underline{\hspace{2cm}}$$

Post Test Decimals
Page 2

30. $.8 \times .8 \times 10 =$ _____

31. $3 \times 3 \times .03 =$ _____

Divide:

32. $3 \overline{)4.11}$

33. $8 \overline{)2.24}$

34. $9 \overline{).909}$

35. $6 \overline{)7.74}$

36. $.4 \overline{)34.8}$

37. $.10 \overline{)200}$

38. $.11 \overline{).121}$

39. $1.3 \overline{)69.9}$

Write as a fraction:

40. $2.5 =$ _____

41. $.03 =$ _____

42. $.399 =$ _____

Write as a decimal:

43. $1 \frac{3}{4} =$ _____

44. $\frac{1}{3} =$ _____

45. $\frac{11}{40} =$ _____

46. $3 \frac{1}{2} =$ _____

Circle the larger number:

47. $.5$ or $.05$

48. $.64$ or $.7$

49. 1.9 or 1.119 or 1.23

50. $.69$ or $.687$ or $.6$

POST TEST PERCENT

Write each of the following as a percent:

1. $10/100 =$ _____

2. $300/100 =$ _____

3. $63/100 =$ _____

4. $1/2 =$ _____

5. $4/5 =$ _____

6. 90 out of 100 = _____

7. 3 out of 5 = _____

8. 3 out of 25 = _____

9. 5 out of 50 = _____

10. 3 out of 10 = _____

11. 200 hundredths = _____

12. 12.3 hundredths = _____

13. 16 hundredths = _____

14. $4\frac{1}{4}$ hundredths = _____

15. .006 hundredths = _____

Change the following to a decimal.

16. 25% = _____

17. .9% = _____

18. 2% = _____

19. .13% = _____

20. 200% = _____

Change the following to a percent.

21. .50 = _____

22. .09 = _____

23. 2.8 = _____

24. 7 = _____

25. .001 = _____

Change the following to a fraction.

26. .9% = _____

27. 2% = _____

28. .13% = _____

29. 200% = _____

30. 2000% = _____

Change the following to a percent:

31. $\frac{3}{4} =$ _____ 32. $12 \frac{1}{5} =$ _____ 33. $\frac{3}{10} =$ _____
34. $\frac{1}{50} =$ _____ 35. $10 \frac{3}{25} =$ _____
36. Find 8% of \$6.50 = _____
37. Find 16% of 5 = _____
38. Find .30% of \$650 = _____
39. Find $\frac{3}{5}\%$ of 50 = _____
40. Find $12 \frac{1}{2}\%$ of \$9.40 = _____

South Carolina has a 4% sales tax on all items.

41. What would be the tax on a stereo which costs \$189.00? _____
42. What would be the total purchase price? _____

Belks has a 25% discount on all men's clothing.

43. What would be the discount allowed on a suit which costs \$89.96? _____
44. What would be the new purchase price on the discounted suit? _____

Bob earns a 2% commission when he sells a car.

45. How much will he make when he sells a car costing \$5,982? _____

Shirts cost the merchant \$54 a dozen. He wants to make a 25% profit on each shirt.

46. How much does each shirt cost? _____
47. How much will he add to each shirt to make his profit? _____
48. How much will he have to sell the shirts for? _____

We borrowed \$350.50 for 3 years at $7 \frac{1}{2}\%$ interest.

49. How much interest did he owe? _____
50. What total amount did he owe the bank? _____

POST TEST THEORY

Factor the following into primes:

1. $33 =$ _____

2. $64 =$ _____

3. $144 =$ _____

Name 3 two digit composite numbers.

4. _____

5. _____

6. _____

7. What is the smallest 2 digit prime number? _____

Name 3 even numbers between 111 and 117.

8. _____

9. _____

10. _____

11. $\text{odd} + \text{odd} =$ _____

12. $\text{even} - \text{odd} =$ _____

13. $\text{even} \times \text{even} =$ _____

14. Circle the odd number. 21 22 24

Add:

15. $-56 + -48 =$ _____

16. $-57 + +26 =$ _____

17. $+101 + +52 =$ _____

18. $-4 + -4 =$ _____

19. $-115 + +115 =$ _____

20. $-22 + +6 =$ _____

21. $+422 + -712 =$ _____

22. $-9007 + -602 =$ _____

Subtract:

23. $-13 - +8 =$ _____

24. $+7 - -3 =$ _____

25. $-18 - +17 =$ _____

26. $-1768 - -1523 =$ _____

27. $-35 - -18 =$ _____

28. $-22 - +46 =$ _____

29. $+28 - +3 =$ _____

Multiply or divide:

30. $+4 \times +5 =$ _____

31. $-6 \times -2 =$ _____

32. $-5 \times -4 =$ _____

33. $-4 \times -2 \times -1 =$ _____

34. $-12 \div -3 =$ _____

35. $+4 \div -4 =$ _____

36. $+606 \div +6 =$ _____

A number must end in 37. _____ or 38. _____
to be divisible by 5.

Name 3 numbers between 55 and 61 divisible by 2.

39. _____ 40. _____ 41. _____

42. A number must end in _____ to be divisible by 10.

43. Which one of the following is divisible by 9? 17 or 171 or 293 or 451

Name each of the following using exponents.

44. $8 \times 8 \times 8 =$ _____

45. $3 \times 2 \times 3 \times 2 \times 5 =$ _____

46. $4(10 \times 10) + 8(10) = 3 =$ _____

Compute the following. Give answer in simplest form.

47. $2^5 =$ _____

48. $10^3 - 1^5 =$ _____

49. $9^3 + 2 =$ _____

50. $2^5 \div 2^3 =$ _____